

REMARKS

Appreciation is expressed for the Examiner's reconsideration of the restriction requirement in the present application and the inclusion in Group I, of claim 12, which is directed to a transformer core and formerly was classified as Group III. Group I, which now comprises claims 1 - 5 and 12, is presently under consideration. Claims 6 - 11 are classified in Group II and are now withdrawn in accordance with applicants' election made in Paper No. 9.

For the sake of clarity and consistency, the specification has been amended to correct a number of obvious typographical errors. The amendment provides for consistent usage of reference numerals and terminology. In particular, in Figs. 1 - 3 and references in the specification thereto, the core is designated as 10, the support assembly is designated as 20, the side legs of the transformer core are designated as 16 and 18, the leg sections of the supports are designated as 24 and 26, the coils are designated as 36 and 38. The recess depicted in Fig. 4 has been re-designated as number 89 to correct a duplicate use of number 90, which is used to reference the supports of Fig. 6. No new matter has been added by way of the amendment to the specification.

Drawing sheets bearing proposed amendments to Figs 3 and 4 have been submitted herewith. For the sake of clarity, obvious drafting errors in Fig. 3, wherein reference numbers 16 and 24 were interchanged and reference numbers 18 and 26 were interchanged, have been corrected. Also for the sake of clarity, the recess in Fig. 4 has been designated with reference numeral 89, to avoid a duplicating reference numeral 90 in Fig. 6, as set

forth hereinabove in connection with the amendment to the specification. A separate letter has been submitted to the Official Draftsperson requesting entry of replacement Figs. 3 and 4, upon approval of the Examiner.

Applicants' invention, as recited by claims 1 – 5 and 12, provides a core support useful in the construction of transformers. The structure provides support needed during the construction of the core, during the core's incorporation into a finished transformer, and in the operation of the transformer. As a result of the novel configuration of the support, it may be employed with relatively small cores, such as transformer cores for devices rated at about 5 kVA, but may also be used in connection with large power and distribution transformers, which have electrical ratings of as much as about 10 MVA and have cores weighing as much as about 25,000 kg. The support is beneficially used in constructing wound cores of amorphous metal. As known by those in the art, the Fe-base amorphous metal frequently used in transformers is prone to embrittlement as the result of heat treatment needed to optimize the material's magnetic properties. In the embrittled state, the material is highly frangible, so that great care must be taken during construction and operation of transformers, lest shards or fragments of the metal inadvertently separated from the core become lodged in the core and produce electrical or mechanical failures. Such failures are highly undesirable for transformers which may serve many customers or industrial processes which rely on the continuous availability of service. Applicants' core support virtually eliminates such problems, and provides a degree of support accommodating the construction of much larger cores, as mentioned above.

Claims 2 – 5 and 12 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. Independent claim 1 and claims 2 – 5 dependent thereon are all drawn to a support assembly adapted to be attached to two intersecting sections of a metal transformer core. Claim 1 further recites that the support assembly includes at least one top section and at least one dependent leg section. Both the top section and the dependent leg section, in turn, are adapted to be affixed to portions of the metal transformer core. Citing *In re Hutchinson* (154 F.2d. 135, 69 USPQ 138), the Examiner has indicated that claims 2 and 12 are improper dependent claims, inasmuch as the transformer core is not positively claimed in the parent claim (i.e., claim 1) due to the language “adapted to.” In *Hutchinson*, the CCPA held that a particular phrase employing the phrase “adapted for use” did not constitute a patentable distinction. Applicants agree that the language “adapted to” may render a claim indefinite (MPEP 2106). However, applicants respectfully submit that the court’s holding does not establish that a phrase using “adapted for use” or “adapted to” is necessarily devoid of a patentable distinction. Rather, applicants maintain that the phrase “adapted to be attached to two intersecting sections of an metal transformer core” properly defines a structural feature of the support assembly claimed by claim 1. Significantly, claims employing this terminology have been held in a later ruling by the CCPA to satisfy the requirements of 35 USC 112, second paragraph:

“For example, paragraph two of claim 31 calls for ‘a pair of sleeves. . . each sleeve of said pair adapted to be fitted over the insulating jacket of one of said cables.’ Rather than being a mere direction of activities to take place in the future, this language imparts a structural limitation of the sleeve. Each sleeve is so structured or dimensioned that it can be fitted over the insulating jacket of a cable. . .

"We see nothing wrong in defining the structures of the components of the completed connector assembly in terms of the interrelationship of the components, or the attributes they must possess, in the completed assembly. More particularly, we find nothing indefinite in these claims. One skilled in the art would have no difficulty determining whether or not a particular collection of components infringed the collection of interrelated components defined by these claims."

In re Venezia, 530 F.2d. 956, 189 USPQ 149. See also MPEP 2173.05(g).

Therefore, applicants submit that the limitations of claim 1 that employ the "adapted to" terminology serve to precisely define present structural attributes of the claimed support assembly in a manner that would permit one of ordinary skill to make and use the invention, particularly in light of the specification, e.g. at page 6, line 29 to page 7, line 7; page 9, line 14, to page 10, line 7; and page 11, line 14, to page 12, line 5.

With respect to claim 2, applicants submit that "the metal transformer core" in line 1 finds antecedent basis in the "an *sic* metal transformer core" in lines 1 – 2 of claim 1. The support assembly of claim 2 is thus properly limited by a more restrictive structural limitation than present in base claim 1, namely a limit of the form of the transformer core to which the support assembly must mate. In particular, the support assembly of claim 2: (i) must be adapted to be attached to two intersecting sections of a wound metal transformer core formed of an annealed amorphous metal alloy; (ii) must have a top section adapted to be affixed to one of the intersections of the wound metal transformer core; and (iii) must have a dependent leg section adapted to be affixed to the other section of the wound metal transformer core.

Applicants submit that claims 3 – 5, which also are directed to a support assembly and depend directly or indirectly from claim 2, are definite for at least the same reasons as claim 2.

Applicants respectfully submit that claim 12 properly recites a transformer, comprising the support assembly delineated by claim 1 and assembled with the requisite transformer core that mates therewith. It is maintained that a person of ordinary skill would be enabled to make and use the transformer of claim 12 in light of applicants' teaching.

Accordingly, reconsideration of the rejection under 35 USC 112, second paragraph, of claims 2 – 5 and 12 as being indefinite for failing to point out and distinctly claim what is regarded as the invention is respectfully requested.

Claims 1 – 5 and 12 were rejected under 35 USC 102(a) as being anticipated by US Patent No. 5,319,341 to Bisbee et al., which discloses core support blockings for supporting a toroidal transformer within a housing. Also disclosed is a toroidal distribution transformer support assembly for use with toroidal transformers of the type including a hollow cylindrical core having inner and outer cylindrical surfaces and end surfaces and electrical windings wound about the core. The support assembly includes a plurality of core support blockings and a support bracket comprising first and second legs, securement elements, and first and second support elements. The securement elements are used to secure the core support blockings to the first and second legs.

The Examiner has indicated that Bisbee et al. discloses applicants' claimed core support, pointing to Bisbee et al.'s Fig. 1. Applicants respectfully disagree, and maintain that any structure disclosed by Bisbee et al. differs in material ways from applicants' core support structure. Attention is drawn to the statement at col. 4, lines 10-11, wherein the patentee indicates that a second vertical support leg is not shown in Fig. 1, presumably for the sake of clarity in the drawing. It is thus submitted that Bisbee et al.'s disclosure is

clearly directed to a quadrilateral, closed frame structure. See also col. 2, lines 31 – 38, which refers to “first and second vertical legs” (line 31, emphasis added). Such a transformer support structure, which “includes a lower support arm and an upper support arm secured to the ends of the vertical legs to make a rectangular support bracket surrounding the transformer” (lines 33 – 36, emphases added) is said to constitute the mounting hardware used to support the transformer within a housing (e.g. a cylindrical transformer can) (line 38). Moreover, independent claim 14 directed to a transformer support assembly, includes the features of first and second legs and first and second support arms (col. 6, lines 53, 58, 61). By way of contrast, the embodiments of applicants’ core structure depicted in Figs. 1 – 7 do not include a quadrilateral or other similarly closed-path structure. Rather, each structure has one or more legs that, at one end, depend from a top section, but terminate at a distal free end.

In addition, the quadrilateral structure of Bisbee et al.’s support defines a plane which is generally diametrical with respect to the cylindrical, toroidal transformer core which is to be supported. As a result, the top and bottom support arms lie generally parallel to the diameter of the core, i.e. across the cylindrical window inside the toroidal core. The presence of these support arms thus impedes to some extent the convective flow of oil or air or other gas used as a coolant fluid in most distribution transformers. Applicants’ support does not require such elements that impede convection in the fluid. Moreover, in most cases the intrusion of these support arms would make it necessary for the core winding to be accomplished before mounting the core in the support assembly. Thus the support assembly of Bisbee et al. may provide support for the finished

transformer, but it is not capable of providing needed support during core winding, whereas applicants' support assembly does.

The Bisbee et al. support also requires pie-shaped core blocking elements that are not required in applicants' support. As disclosed by Bisbee et al., these elements are relatively small and provide the only direct support for the core, the support being confined to occur at only a limited number of points with small area. While such support may be adequate for the relatively small distribution transformers envisioned by Bisbee et al. (up to 50 kVA rating with a core of 100 kg. -- see col. 1, lines 14 – 16), applicants' support is taught as being useful for cores up to 50 MVA or larger and weighing up to about 25,000 kg (see specification, page 14, line 27 to page 15, line 6). Such a core, if constructed and supported in accordance with the disclosure of Bisbee et al., would experience a large bending moment about an axis defined by the core blocking elements and would be highly prone to the detrimental magnetic and mechanical effects of a high stress. Embodiments of applicants' structure, on the other hand, provide relatively large facial areas of support that permit the construction of much larger cores.

Still further, applicants' support assembly is constructed in a manner that permits the support elements to be surrounded by coils that in different embodiments are either wound in place or pre-wound and slipped onto the legs of a wound core that has been unlaced and subsequently is relaced. By way of contrast, only the core blocking elements in the Bisbee et al. support structure are within the windings, while the four sides of the frame are outside the windings. As discussed hereinabove, the limited area of support afforded by

the core blocking elements is in many instances inadequate to support large cores, such as are used in some embodiments of the present invention.

In view of the above-recited material differences between the structures disclosed by Bisbee et al. and those delineated in present claims 1 – 5 and 12, it is submitted that claims 1 – 5 and 12 are not anticipated by Bisbee et al.

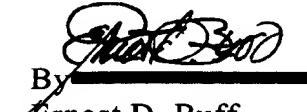
Accordingly, reconsideration of the rejection of claims 1 – 5 and 12 under 35 USC 102(a) as being anticipated by Bisbee et al. is respectfully requested.

US Patent No. 4,766,407 to Grimes; US Patent No. 5,067,917 to Howard; US Patent No. 5,608,371 to Valenci et al; US Patent No. 4,599,594 to Simann; and US Patent No. 4,438,421 to Leach, Jr. were cited by the Examiner but not applied. Clearly, these patents do not disclose or suggest the subject matter defined by present claims 1-5 and 12.

In view of the amendments to the specification and drawings, and the foregoing remarks, it is submitted that the present application has been placed in allowable condition. Reconsideration of the rejection of claims 1 – 5 and 12, and their allowance, are earnestly solicited.

Respectfully submitted,

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U.S. PATENT & TRADEMARK OFFICE

Annotated Sheet Showing Changes

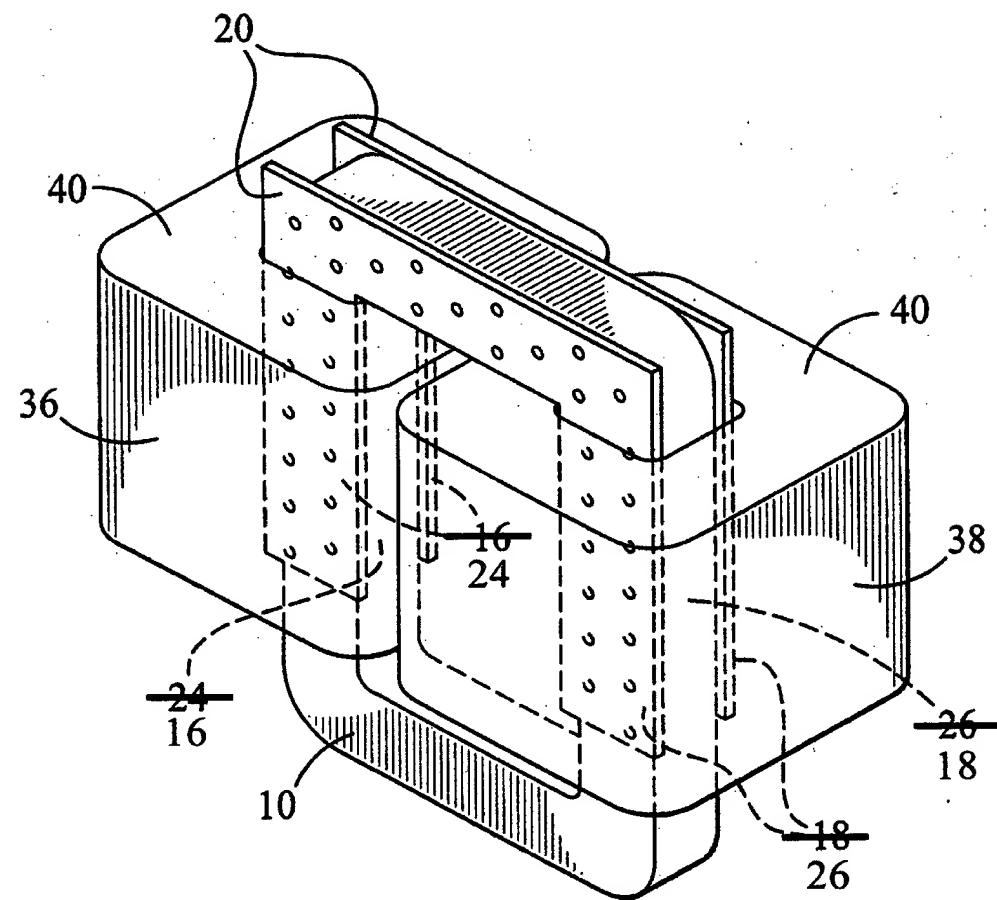


FIG. 3

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TECH & TRANSFER DIVISION

Annotated Sheet Showing Changes

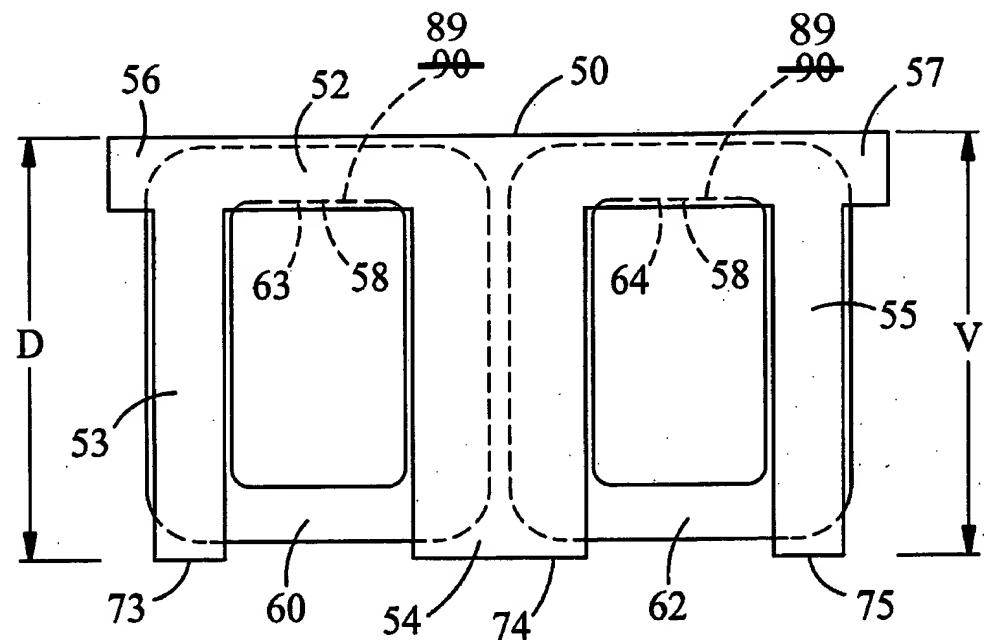


FIG. 4

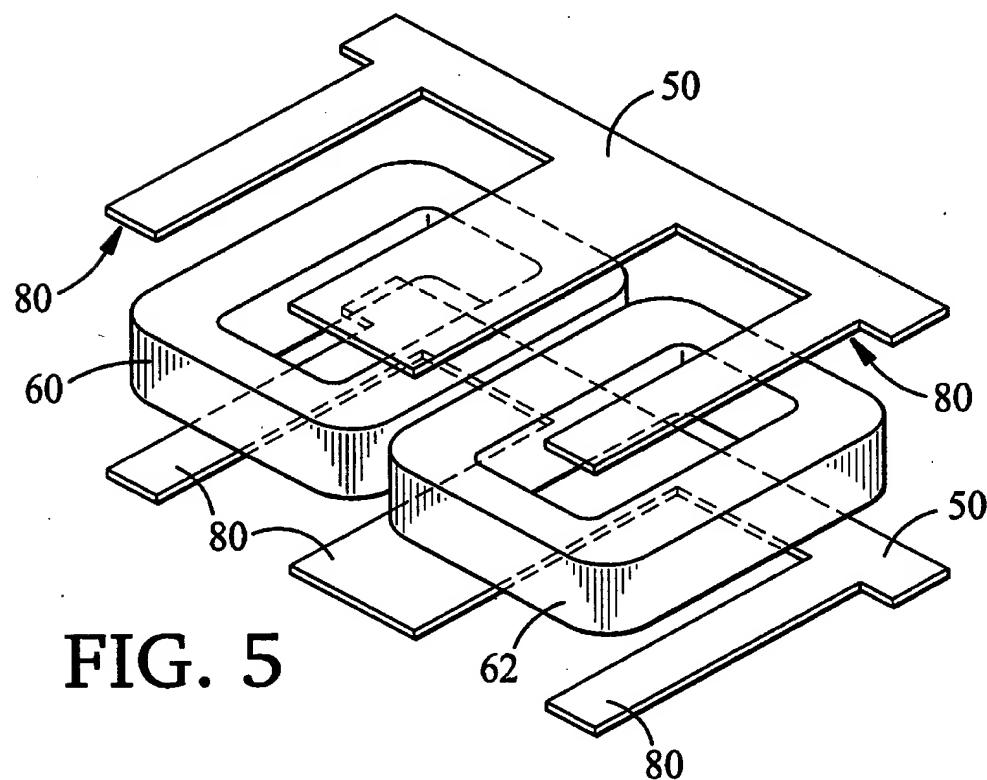


FIG. 5